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SUMMARY REPORT ON QUALITY OF INTERSTATE WATERS

JAMES RIVER (NORTH DAKOTA - SOUTH DAKOTA)

PUBLIC HEALTH SERVICE, WASHINGTON, D.C.

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SUMMARY REPORT ON QUALITY OF INTERSTATE WATERS: JAMES RIVER (NORTH DAKOTA - SOUTH DAKOTA)

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16. Abstracts
Water quality of the James River and its tributaries in North and South Dakota in 1961 was examined. Tabular data are provided regarding: sources of pollution, stream flow, interference with water uses, adequacy of treatment measures, action of official agencies, Public Health Service grants for construction of waste treatment facilities, nature of delays in abating pollution, and time schedule for proposed remedial action. A brief bibliography is included.

17. Key Words and Document Analysis. 17a. Descriptors

17b. Identifiers/Open-Ended Terms

*Water quality	South Dakota
*Water pollution sampling	State agencies
Tables(Data)	Construction
Stream flow	Water pollution control equipment
Water supply	
James River	
North Dakota	

17c. COSATI Field/Group 13B

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SUMMARY REPORT ON QUALITY OF INTERSTATE WATERS

JAMES RIVER

(NORTH DAKOTA - SOUTH DAKOTA)

This report, one of a series developed by the Public Health Service, is a factual presentation of conditions which exist in a specific location or area, based on data and information furnished by State, Interstate and Federal agencies concerned. This report is a brief summary of such material in the files of the Public Health Service as of the time the report is issued. The report will be revised from time to time to reflect new information and changing conditions.

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

May 1, 1961

SUMMARY REPORT ON QUALITY OF INTERSTATE WATERS

JAMES RIVER

(NORTH DAKOTA - SOUTH DAKOTA)

(Data Current to May 1, 1961)

I. LOCATION

The James River rises west of Fessenden, North Dakota (east central North Dakota), flows east for a short distance, and then follows a general southerly course through South Dakota to its confluence with the Missouri River east of Yankton, South Dakota (river mile M-835). The stream crosses the North Dakota-South Dakota State line at river mile 459 approximately.

Largest municipalities in this predominately agricultural basin are Jamestown, North Dakota (population 15,163), Aberdeen, South Dakota (population 23,073); Huron, South Dakota (population 14,180); and Mitchell, South Dakota (population 12,555).

Of the principal tributaries to the James, two are interstate; the Elm River (river mile 429) and the Maple River (river mile 429-45). Other major tributaries are Pipestem Creek (river mile 578), Snake Creek (river mile 300), Turtle Creek (river mile 290), and Firesteel Creek (river mile 131). The Maple River is the subject of a separate summary report.

II. SOURCES OF POLLUTION

TABLE NO. 1 - BASIC DATA ON SOURCES OF POLLUTION 1/

Municipality or Industry	River Miles Above Mouth	Sewered Population	P. E. Waste Before Treatment	Nature of Wastes	Treatment Provided	P. E. Discharge to Watercourses
James River						
Fessenden, N.D.	Undet.	700	700	Municipal	Lagoon	0
New Rockford, N.D.	665	1,800	2,300	Municipal & Industrial	Septic Tank	2,300
Kelly Creek	640					
Carrington, N.D.	640-21	1,500	3,625	Municipal & Industrial	Secondary 2/	1,800
Carrington Sausage Co.		NA	300	Meat Packing	Septic Tank	300
[illegible]es River						
Pipestem Creek	578					
Jamestown, N.D.	578-2					
Orleans Canning Co.		NA	6,500	Meat Packing	Lagoon	600
Stock Sales Co.		NA	400	Miscellaneous Food	None	400
James River						
Jamestown, N.D.	577	10,000	12,550	Municipal & Industrial	Lagoon	0
Jamestown R R Shop		NA	100	Industrial	None	100
State Hospital		2,375	2,375	Sanitary	Lagoon	0
La Moure, N.D.	506	850	2,170	Municipal & Industrial	None	2,170
[illegible]Oakes, N.D.	484	1,420	2,000	Municipal & Industrial	None	2,000

TABLE NO. 1 - BASIC DATA ON SOURCES OF POLLUTION 1/

Municipality or Industry	River Miles Above Mouth	Sewered Population	P. E. Waste Before Treatment	Nature of Wastes	Treatment Provided	P. E. Discharge to Watercourses
State Line	459					
Moccasin Creek	378					
Foot Creek	378-43-4					
Leola, S.D.	378-43-67	830	1,100E*	Municipal	Lagoon	0
Aberdeen, S.D.	378-43- 4					
Gerharter Bros. Processing		NA	500E	Slautering & Mt. Pack.	None	780E
N.W. Packing Co.	378-43-4	NA	1,325	Ind.	Blood Recovery	1,325
Torigian Produce Co.	378-43-4	NA	130E	Mt.Pack	Lagoon	0
Moccasin Creek	378					
Aberdeen, S.D.	378-43	23,000	23,000E	Municipal	Secondary	6,000E
James River						
Mud Creek	338					
Pierpont, S.D.	338-48	250	250E	Municipal	Primary	175E
Groton, S. D.	338-36	1,060	1800	Municipal& Industrial	Lagoon	0
James River						
Snake Creek	300					
Ipswich, S.D.	300-90	1,100	1,100E	Municipal	Secondary	200E
Nixon River	300-10					
Cresbard, S. D.	300-10-20-25	225	225E	Municipal	Lagoon	0
Faulkton, S. D.	300-10-65	1,050	1,050E	Municipal	Lagoon	0

TABLE NO. 1 - BASIC DATA ON SOURCES OF POLLUTION 1/

Municipality or Industry	River Miles Above Mouth	Sewered Population	P. E. Waste Before Treatment	Nature of Wastes	Treatment Provided	P. E. Discharge to Watercourse
James River						
Turtle Creek	290					
Highmore, S. D.	290-120	1,070	1,070E	Municipal	None	1,070 E
Miller, S. D.	290-95	2,050	2,050E	Municipal	Secondary	350E
St. Lawarence, S.D.	290-90	280	280E	Municipal	Primary	200E
Redfield, S.D.	290 -2	2,950	3,540E	Municipal & Industrial	Lagoon	0
State Hospital & School		1,150	1,150E	Sanitary	Lagoon	0
James River						
Thunder Creek	248					
Conde, S. D.	248-Undet.	380	380E	Municipal	Lagoon	0
Doland, S.D.	248-36	480	480E	Municipal	None	480E
James River						
Foster Creek	248					
Clark, S.D.	248-47	1,460	2,170E	Municipal & Industrial	Secondary	435E
James River						
Huron, S.D.	222	14,000	42,700 3/	Municipal & Industrial	Secondary	8,600 4/
Cain Creek	214					
Wessington, S.D.	214-63	370	370E	Municipal	Lagoon	100E
Wolsey, S.D.	214-41	350	350E	Municipal	None	350E
James River						
Pearl Creek	212					
South Fork	212-5					
Iroquois, S.D.	212-5-27	380	380E	Municipal	Primary	300E

TABLE NO. 1 - BASIC DATA ON SOURCES OF POLLUTION 1/

Municipality or Industry	River Miles Above Mouth	Sewered Population	P. E. Waste Before Treatment	Nature of Wastes	Treatment Provided	P. E. Discharge to Watercourse
James River						
Redstone Creek	188					
Carthage, S.D.	188-37	360	360E	Municipal	Primary	250E
James River						
Woonsocket, S.D.	177	800	1,000E	Municipal & Industrial	None	1,000E
Unnamed Creek	170					
Artesian, S.D.	170-10	320	320E	Municipal	None	320E
James River						
Firesteel Creek	139					
Wessington Springs, S.D.	139-90	1,480	1,800E	Municipal& Industrial	Lagoon	0
James River						
Mitchell, S.D.	138	12,500	35,000	Municipal& Industrial	Secondary 5/	3,500E
Unnamed Creek	137					
Mitchell Packing Co.	139-1	NA	2290	Indus.	None	2290
Mylan Meat Co.	137-2	NA	855E	Meat Packing	None	855E
James River						
Enemy Creek	131					
Plankington, S.D.	131-67	640	640E	Municipal	Primary	450E
State Tng. School		200	300E	Sanitary	Secondary	45E
Mt. Vernon, S.D.	131-60	370	370E	Municipal	None	370E
James River						

TABLE NO. 1 - BASIC DATA ON SOURCES OF POLLUTION 1/

Municipality or Industry	River Miles Above Mouth	Sewered Population	P. E. Waste Before Treatment	Nature of Wastes	Treatment Provided	P. E. Discharge to Watercourse
Pierre Creek	124					
Alexandria, S.D.	124-6	600	700E	Municipal	Primary	490E
James River						
Twelve Mile Creek	97					
Ethan, S.D.	97-20					
Ethan Dairy Prod.		NA	190E	Creamery	Septic Tank	190E
South Fork	97-4					
Dimock, S.D.	97-4-13					
Dimock Dairy Prod.		NA	280	Creamery	Septic Tank	280E
Twelve Mile Creek	97					
Pony Creek	97-2					
Parkston, S.D.	97-2-16	1,500	1,800E	Municipal & Industrial	Lagoon	0
James River						
Wolf Creek	83					
Spencer, S.D	83-47	450	450E	Municipal	Secondary	100E
Emery, S.D.	83-32	500	500E	Municipal	Primary	400E
Bridgewater, S.D.	83-23	690	690E	Municipal	None	690E
James River						
Dawson Creek	33					
Scotland, S.D.	33-6	1,070	1,400E	Municipal & Industrial	Lagoon	0
James River						

*E - Estimated.
1/ Data from PHS Publication No. 622 or PHS Region VI.
2/ Lagoon under construction - P.E. discharge expected to be zero.
3/ 81,000 in fall and early winter.
4/ 16,400 in fall and early winter.
5/ New additions under construction.

TABLE NO. 1 - BASIC DATA ON SOURCES OF POLLUTION

Municipality or Industry	River Miles Above Mouth	Sewered Population	P. E. Waste Before Treatment	Nature of Wastes	Treatment Provided	P. E. Discharge to Watercourse
Furlong Creed	25					
Menno, S. D.	25-6	830	1,275E	Municipal& Industrial	Secondary	600E

To date, discharges to the James River from sources of pollution in North and South Dakota have continued as indicated above.

TABLE NO. 2 - STREAM FLOW DATA IN cfs 6/

No. and Location of gaging station	Years of Record	Average	Maximum	Minimum
James River at Jamestown, N.D.	23	54	6,390	0
James River at LaMoure, N.D.	8	69	5,730	0
James River at Columbia, S.D.	13	110	5,420	0
James River at Huron, S.D.	16	230	5,580	0
James River near Scotland, S.D	30	330	10,800	0

Periods of little or no flow are quite common throughout the James River Basin. During these low flow intervals, pollution of the River occurs at the North Dakota-South Dakota state line downstream from the municipalities of La Moure and Oakes, North Dakota. Severe oxygen depletions were detected in stream studies made in February, August, and September, 1951. 7/

III. INTERFERENCE WITH WATER USES

Wastes discharged into the James River from sources in North Dakota interfere with water uses in South Dakota by causing:

6/ From USGS Water Supply Paper No. 1559.
7/ James River Drainage Basin, April 1952 (See Bibliography).

1. Deterioration of water quality so as to detrementally affect the propagation of fish life. Zero dissolved oxygen values have occurred during winter months when ice cover minimized natural stream aeration, and DO values less than 4 ppm have been reported during summer months.[8/] No fish kills are known to have been reported.

IV. ADEQUACY OF TREATMENT MEASURES

The following table indicates adequacy of treatment devices listed in Table No. 1:

Municipality or Industry	Treatment Needs
Fessenden, N.D.	None
New Rockford, N.D.	Replace Plant
Carrington, N.D.	Lagoon under construction
Carrington Sausage Co.	Replace Plant
Jamestown, N.D.	None
State Hospital	None
Orleans Canning Co.	None
Leola, S.D.	None
Aberdeen, S.D.	Additional Treatment methods
Pierpont, S.D.	None
Groton, S.D.	None
Ipswich, S.D.	None
Cresbard, S.D.	None
Faulkton, S.D.	None
Miller, S.D.	None
St. Lawrence, S.D.	Additional treatment methods or replace plant
Redfield, S.D.	None

8/ Ibid.

Municipality or Industry	Treatment Needs
State Hospital & School	None
Conde, S.D.	None
Clark, S.D.	None
Huron, S.D.	Enlarge plant
Wessington, S.D.	Replace plant
Iroquois, S.D.	Additional treatment methods or replace plant
Carthage, S.D.	Additional treatment methods
Wessington Springs, S.D.	None
Mitchell, S.D.	None
Plankinton, S.D.	Additional treatment methods or replace plant
State Training School	None
Alexandria, S.D.	Additional treatment methods or replace plant
Ethan, S.D.	
Ethan Dairy Products	Replace Plant
Dimock, S.D.	
Dimock Dairy Products	Replace Plant
Parkston, S.D.	None
Spencer, S.D.	None
Emery, S.D.	Additional treatment methods or replace plant
Scotland, S.D.	None
Menno, S.D.	Additional treatment methods

V. ACTION OF OFFICIAL AGENCIES

At the request and in cooperation with the Bureau of Reclamation, the "ames River Basin Water Pollution Investigation" was prepared by the Public Health Service and the Departments of Health of North Dakota and South Dakota

in April 1952. This document provided a large amount of water quality information on the James River and its tributaries. Also included in the report were pollution abatement needs of communities throughout the watershed.

In July 1953, the joint Public Health Service-Missouri Basin States report, "A Comprehensive Program for Control of Water Pollution, Missouri Drainage Basin", was published. This document established pollution abatement requirements on the Missouri River and its tributaries. The James River was included in this publication.

Since the publishing of the above reports, substantial progress toward construction of needed waste treatment works has resulted throughout most of the James basin. However, the municipalities of LaMoure and Oakes, North Dakota have as yet neglected their responsibilities for "clean-up action" on the interstate waters.

The following table indicates Federal participation in construction of sewage treatment works in the James River Watershed:

TABLE NO. 3 - PUBLIC HEALTH SERVICE GRANTS FOR CONSTRUCTION OF WASTE TREATMENT FACILITIES

Municipality	Date Approved	Amount	Estimated Total Cost of Project	Type of Project	Status of Project
Carrington, N.D.	1-26-61	$ 20,437	$ 68,125	Lagoon	Under Const
Jamestown, N.D.	4-20-60	29,400	173,102	Lft. Sta. & Force Main	Under Const.
Jamestown, N.D.	2-26-57	26,925	91,157	Lagoon	Complete
State Hospital	2-20-58	62,051	208,230	Lagoon	Complete
Edgeley, N.D.	10-30-59	11,108	38,000	Lagoon	Complete
Forbes, N.D.	12-21-60	4,950	16,464	Lagoon	Under Const.
Hecla, S.D.	2-14-61	13,315	126,999	Lagoon	Planning
Leola, S.D.	4-28-59	8,465	27,884	Lagoon	Complete

TABLE NO. 3 - PUBLIC HEALTH SERVICE GRANTS FOR CONSTRUCTION OF WASTE TREATMENT FACILITIES

Municipality	Date Approved	Amount	Estimated Total Cost of Project	Type of Project	Status of Project
Claremont, S.D.	2-17-60	$ 8,081	$ 54,948	Lagoon	Complete
Britton, S.D.	11-24-58	12,517	41,722	Lagoon	Complete
Groton, S.D.	12-3-57	14,233	48,794	Lagoon	Complete
Mellette, S.D.	5-6-59	7,392	24,639	Lagoon	Planning
Cresbard, S.D.	10-14-58	5,186	20,970	Lagoon	Complete
Faulkton, S.D.	9-18-58	9,024	36,124	Lagoon	Complete
Orient, S.D.	10-17-57	2,746	9,153	Lagoon	Complete
Conde, S.D.	11-18-58	4,433	78,538	Lagoon	Complete
Redfield, S.D.	3-10-59	20,798	69,755	Lagoon	Complete
Clark, S.D.	1-18-60	7,655	32,915	Add. & Imp. to Plt.	Complete
Woonsocket, S.D.	6-19-59	15,434	185,032	Lagoon	Planning
Wessington Springs S.D.	3-28-60	5,482	24,163	Lagoon	Complete
Mitchell, S.D.	3-28-58	135,000	439,535	Add. to Plt.	Under Const
Parkston, S.D.	4-2-57	14,276	58,200	Lagoon	Complete
Scotland, S.D.	4-7-59	6,117	24,587	Lagoon	Complete

VI. NATURE OF DELAYS IN ABATING POLLUTION

Undet.

VII. TIME SCHEDULE FOR PROPOSED REMEDIAL ACTION

The North Dakota State Department of Health has advised Oakes and LaMoure, North Dakota to have adequate waste treatment facilities under construction by 1962.

Prepared and Approved by Region VI, (Kansas City), (7/27/61)

Approved by Enforcement Branch September 21, 1961

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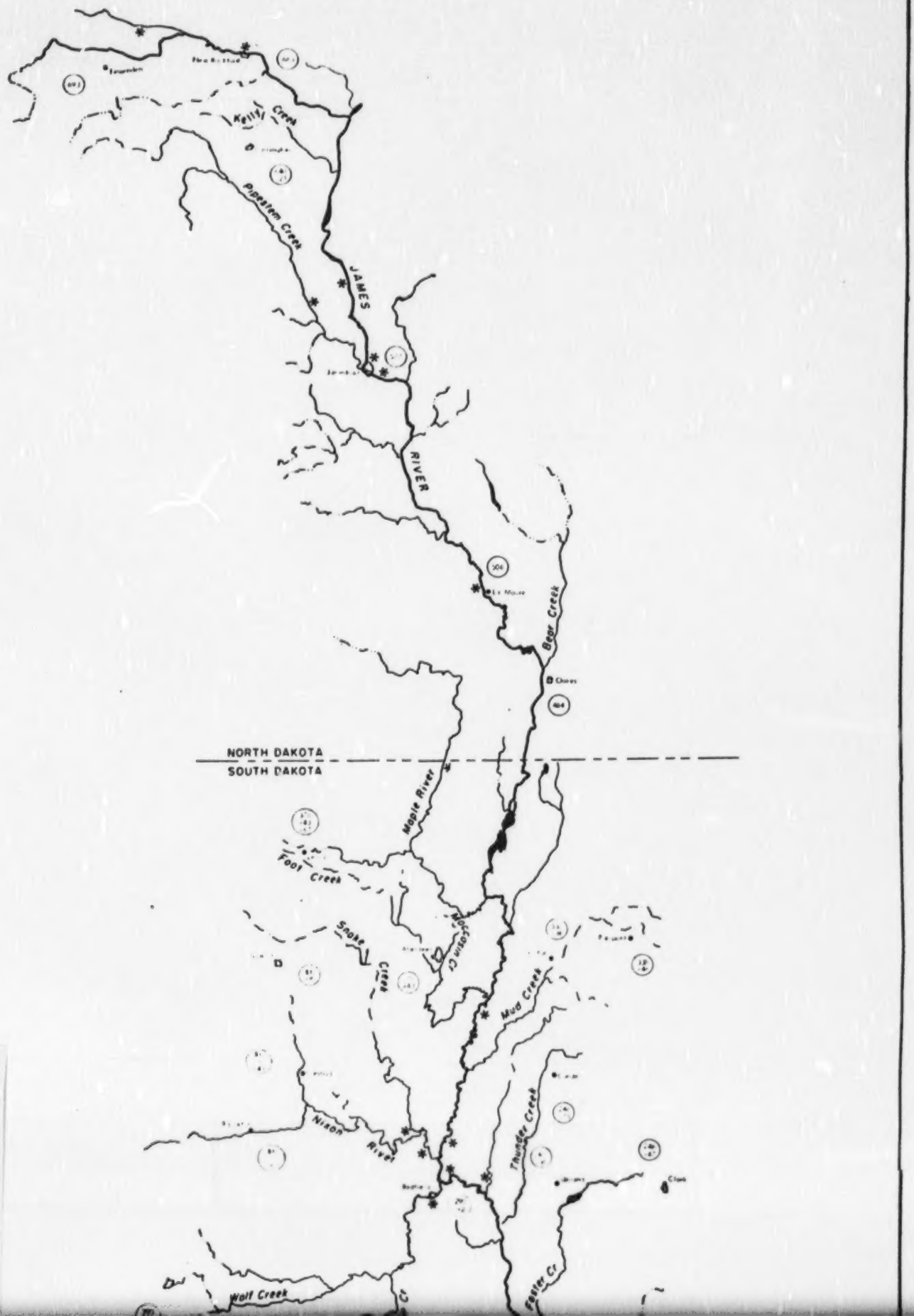
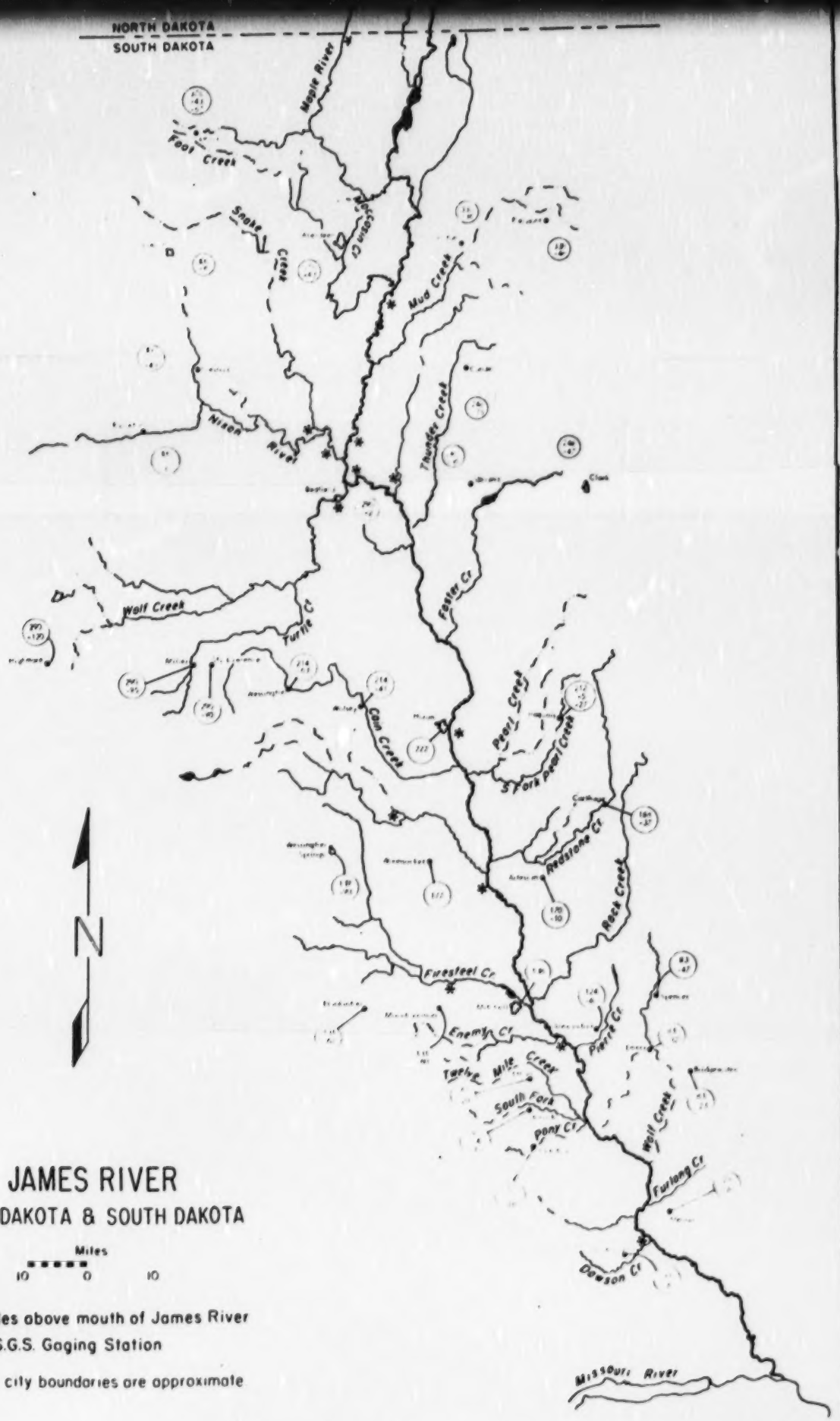
4. U. S. Geological Survey, Surface Water Supply of the United States, 1958, Part 6-A Missouri River Basin above Sioux City, Iowa, U. S. Government Printing Office, 1960, Geological Survey Water-Supply Paper 1559.


Kelly Creek
Pipestem Creek
JAMES
RIVER
Beer Creek
NORTH DAKOTA
SOUTH DAKOTA
Maple River
Foot Creek
Snake Creek
Mud Creek
Thunder Creek
Nixon River
Wolf Creek



JAMES RIVER

NORTH DAKOTA & SOUTH DAKOTA

Miles

10 0 10

( ) Miles above mouth of James River

* U.S.G.S. Gaging Station

Note: All city boundaries are approximate